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### An Educated Man

*"...Sex for the students, athletics for the alumni, and parking for the faculty."  
...major concerns of US college campuses.  
—Kerr*

The word "educate," derived from the Latin to lead out, describes a process wherein the ignorant follow a mentor wherever she leads. In today's environment, with many competing demands vying for the mind of the student, what we teach and how we present it, is more important than ever. What is learned in this process shapes the outlook and bounds the vision of the student. The problem is compounded by the need to see beyond the desire to produce an educated man and to make it possible for the student to put bread on the table at the conclusion of his training.

In nuclear medicine, focused training in the art and science of radionuclide studies is a worthy goal. The respected clinician imager can evaluate data from all modalities to offer a realistic appraisal of the patient. Therein comes the rub. No one person can keep up with every advancement in radionuclide imaging and still claim to be an expert in the entire field of imaging. A proponent of in-depth education in one area argues that this understanding is required so that a person may advance the state of knowledge in a specified area. A proponent of the broad educational experience points to the reality of the patient care environment in which multiple imaging modalities contribute to clinical care.

In this issue of the *Journal*, Doctors Maynard, Wagner, Ell and Holman, all of whom have contributed to the advancement of nuclear medicine, debate how best to educate our trainees. Each of the protagonists has served as a role model, mentoring many students. The debate is healthy and timely. The crystal ball may be cloudy, but we need to plan for the practitioners of the next century, lest we arrive there like the druids with plenty of monuments to our obsession and no one there to make our case.

**H. William Strauss, Editor**  
*The Journal of Nuclear Medicine*

**Influence of the Blood Glucose Concentration on FDG Uptake in Cancer—A PET Study**

Five patients with head and neck cancer underwent two PET studies prior to therapy, first in the fasting state and then 2-5 days later after oral glucose loading ..... *page 1*

**Editorial: FDG-PET in Oncology: There Is More to It Than Looking at Pictures.** ..... *page 6*

**Fluorodeoxyglucose Imaging of Advanced Head and Neck Cancer After Chemotherapy**

In 18 patients with proven cancer, PET studies with FDG were performed prior to the first chemotherapeutic cycle with cisplatin and 5-FU. A second exam after the first chemotherapeutic cycle was performed in 11 patients. .... *page 12*

**Thallium Scintigraphy in the Evaluation of Mass Abnormalities of the Breast**

Eighty-one female patients underwent thallium scintigraphy of the breast because of palpable breast masses. An additional 30 females with no palpable abnormalities were also studied. .... *page 18*

**Ultrastructural Histology Correlates with Results of Thallium-201/Technetium-99m Parathyroid Subtraction Scintigraphy**

Ninety randomly selected patients were compared for differences at the cellular level between parathyroid adenomas and/or hyperplasias detected or missed by <sup>201</sup>Tl or <sup>99m</sup>Tc subtraction scintigraphy. .... *page 24*

**Technetium-99m-1,2-bis[bis(2-Ethoxyethyl)Phosphino]Ethane: Human Biodistribution, Dosimetry and Safety of a New Myocardial Perfusion Imaging Agent**

Biodistribution, safety and dosimetry were evaluated in 12 volunteers at rest and during exercise. Biodistribution was studied by acquiring whole-body

or serial static images up to 48 hr postinjection ..... *page 30*

**Human Pathologic Correlation with PET in Ischemic and Nonischemic Cardiomyopathy**

Myocardial perfusion and metabolism were evaluated in nine patients prior to orthotopic cardiac transplantation using PET with <sup>13</sup>NH<sub>3</sub> and <sup>18</sup>FDG. .... *page 39*

**Renovascular Hypertension: A Perfusion Disturbance Is Described That Escaped Recognition**

Twenty-three patients with hypertension and angiographically documented renovascular disease were imaged in the supine position as well as during upright exercise to determine if patients with abnormal exercise scintigrams have a perfusion abnormality characterized by dysregulation of renal blood flow. .... *page 48*

**Myocardial Uptake of Metaiodobenzylguanidine in Patients with Left Ventricular Hypertrophy Secondary to Valvular Aortic Stenosis**

The time course of myocardial uptake of [<sup>123</sup>I]MIBG was studied in 26 patients, including 7 control and 6 heart transplant recipients. .... *page 57*

**Colorectal Cancer Imaging with Iodine-123-Labeled CEA Monoclonal Antibody Fragments**

The efficacy and safety of <sup>123</sup>I-labeled CEA Mab fragments was evaluated in 62 patients with previously confirmed colorectal cancer. .... *page 61*

**Quick Diagnosis of Hyperthyroidism with Semiquantitative 30-Minute Technetium-99m-Methoxy-Isobutyl-Isonitrile Thyroid Uptake**

Ten normal volunteers and 14 patients with hyperthyroidism were studied

with pinhole thyroid imaging 30 min after intravenous injection of 10 mCi of <sup>99m</sup>Tc-MIBI ..... *page 71*

**Autoradiographic Evaluation of the Intra-Tumoral Distribution of 2-Deoxy-D-Glucose and Monoclonal Antibodies in Xenografts of Human Ovarian Adenocarcinoma**

The intra-tumoral distribution and intracellular localization of DG injected in vivo was studied by autoradiography in a nude mouse model of human ovarian carcinoma and compared to tumor-specific and irrelevant radiolabeled Mabs ..... *page 75*

**Validation of Nitrogen-13-Ammonia Tracer Kinetic Model for Quantification of Myocardial Blood Flow Using PET**

Myocardial blood flow was determined noninvasively in 11 open-chest anesthetized dogs using dynamic PET. Radiopharmaceuticals were administered intravenously and measurements were carried out at rest and following pharmacologic vasodilation. .... *page 83*

**Joint Uptake and Body Distribution of a Technetium-99m-Labeled Anti-rat-CD4 Monoclonal Antibody in Rat Adjuvant Arthritis**

By using an isotope matched Mab with irrelevant specificity as a control, joint uptake and biodistribution of a technetium-labeled Mab to the rat CD4 molecule was investigated after intravenous injection in normal rats and in animals with experimentally induced adjuvant arthritis. .... *page 92*

**Brain Uptake of Thallium-201 from the Cerebrospinal Fluid Compartment**

Autoradiographic studies of rat brain after stereotaxic <sup>201</sup>Tl injections were used to elucidate the movement of the tracer through the cerebrospinal fluid compartment and uptake by normal brain. .... *page 99*

**Uptake and Biodistribution of Technetium-99m-MD<sup>32</sup>P During Rat**

### **Tibial Bone Repair**

Uptake of Tc-MDP was studied in a rat model of primary bone formation following tibial bone marrow ablation. Five radiopharmaceuticals were injected and the uptake of each was followed in whole bone as well as in the organic and inorganic phases of bone. .... page 104

### **Direct and Indirect Technetium-99m-Labeled Antibodies—A Comparison of In Vitro and Animal In Vivo Properties**

The B72.3 and C110 IgG antibodies were labeled directly via stannous ion reduction and indirectly via the hydrazino nicotinamide chelate and then compared in vitro and in vivo. .... page 109

### **A PET Radiotracer for Studying Serotonin Uptake Sites: Carbon-11-McN-5652-Z**

The labeling of McN-5652-Z with <sup>11</sup>C and the evaluation of this radiotracer in rodents with respect to in vivo binding characteristics are described. .... page 120

### **Cerebrovascular Accident Associated with Dipyridamole Thallium-201 Myocardial Imaging**

Dipyridamole-induced vascular steal is seen as the likely mechanism responsible for precipitating a stroke

during a <sup>201</sup>Tl myocardial study of a patient with known aortoiliac occlusive disease ..... page 128

### **Bile Leak from Gallbladder Perforation Mimicking Bowel Activity and a False-Negative Result in Morphine-Augmented Cholescintigraphy**

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### **A Procedure for Patient Repositioning and Compensation for Misalignment Between Transmission and Emission Data in PET Heart Studies**

The procedure was tested on phantom and PET heart studies. Misalignments down to 2.5 mm translation and 1° rotation in the transaxial plane and 4 mm in the axial direction can be recognized and compensated ..... page 137

### **Attenuation Correction Using Count-Limited Transmission Data in Positron Emission Tomography**

The effect of transmission data processing on noise and quantitative accuracy of reconstructed PET images was investigated and the limitations assessed ..... page 143

### **Routine Application of Fractionated HMPAO Stored at -70°C for WBC Scintigraphy**

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### **Medical Imaging in the Nineties: New Directions for Nuclear Medicine**

### **The New Molecular Medicine**

### **We Are Training Our Future**

### **The Future of Nuclear Medicine: A European Perspective from Europe**